Using Malathion to Eradicate the Boll Weevil in Tennessee

Q. What is malathion and how is it used?
A. Malathion is an organophosphate insecticide that is commonly used to control pests in homes, gardens, and orchards. It is one of the safest pesticides available. There are many uses for malathion, including agricultural and human health uses. In an agricultural setting, malathion is used to eliminate pests, like boll weevils and exotic fruit flies, that threaten the productivity of important crops like cotton and citrus. In urban areas, malathion is used to control mosquitoes that can carry West Nile virus and other diseases of public health importance. Malathion is also used as an insecticide to control pests in homes and personal gardens. In addition to controlling agricultural pests, malathion is approved by the U.S. Food and Drug Administration as a prescription drug for the treatment of head lice on humans.

Q. What is the Southeastern Boll Weevil Eradication Program?
A. This program is a cooperative effort in which State and Federal officials work with local cotton growers to eradicate the boll weevil incrementally from the southeastern United States. Since 1892, the boll weevil has plagued U.S. cotton farmers. Boll weevil eradication began with a successful trial program in North Carolina and southern Virginia in 1978. Since then, the southeastern program has expanded to include operations in South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, and Missouri.

A similar program has been completed in California, Arizona, Kansas, New Mexico, and adjacent areas of Mexico. In addition, growers in Texas, Oklahoma, Louisiana, and Arkansas are also involved in the active eradication of the boll weevil.

Q. Why is malathion used to eradicate the boll weevil?
A. Prior to the implementation of the weevil eradication program, farmers had their own chemical treatment methods to counteract the destructive boll weevil. Many of these methods were much less environmentally friendly than malathion and less effective. Without a total eradication plan that included all cotton fields, farmers worked individually to control the pest, treating their fields many times each season, only to do the same thing again year after year.

One of the main goals of the eradication program is to eliminate the growers' continual need for these potent pesticides. The end result of the program's efforts will be a drastic reduction in the use of pesticides by cotton farmers. In other States that have already eradicated the boll weevil, pesticide use has dropped by as much as 40 to 100 percent, with growers in many areas no longer treating at all.

Without the help of the boll weevil eradication program, farmers would have no choice but to revert back to their previous ways in an effort to protect their cotton crop and their livelihood. This is why the vast majority of the nation's farmers have voted to fund their local eradication efforts.

Q. How much malathion is used?
A. The amount of malathion needed to effectively kill the boll weevil is very small. Only 10-16 fluid ounces of malathion are used to treat each infested acre (43,560 square feet). That's like taking less than one can of soda and evenly distributing it over an entire acre.

Q. How is the malathion applied?
A. Both aerial and ground applications of malathion may be used depending on the size and location of the cotton fields. Aerial applications are performed with small fixed-wing aircraft and some helicopters. Ground applications involve the use of high-clearance tractors or truck-mounted sprayers controlled by the driver. The malathion is released at an ultra-low volume, and directed onto the cotton plants in each field, where it effectively controls boll weevils.

The boll weevil eradication program uses careful precision, including global positioning systems (GPS), to apply malathion to cotton fields. Because of application techniques and the rural location of most cotton fields, the risk of human exposure is low. Unlike other eradication programs that spray entire areas, the boll weevil program only targets infested cotton fields, further minimizing human exposure. Some residents living next to cotton fields, however, may on rare occasions experience minimal drift, which involves a very small fraction of the applied material. In situations where homes or other sensitive sites are in close proximity to infested cotton fields, program personnel monitor the treatments by using oil-sensitive dye cards between the edge of the field and the sensitive site. Very small amount of drift

can be identified by these cards, allowing personnel to adjust the treatment or reschedule it when the conditions are more favorable, thus reducing the risk of exposure. The Boll Weevil Eradication Program monitors its malathion activities very closely, and is committed to working with homeowners who have questions or concerns about malathion drift or exposure.

Q. How often does the eradication program plan to spray each cotton field?
A. It takes about three seasons to eradicate the boll weevil. Prior to the first full season, all fields are treated several times in the fall to kill as many weevils as possible before winter. The first killing frost usually marks the end of treatment for the season.

During the first full season, spraying is limited only to fields where infestations are detected. Traps are used to determine whether boll weevils are present in each field. The number of times each field is treated depends on whether additional boll weevils are found following malathion applications. On average, fields are treated about seven times during the first full season, although many fields will require few, if any, treatments.

Similar operations are performed during the second full season of the program. If all goes as planned, by the third or fourth season eradication should be almost complete. Spraying will occur only in fields where the boll weevil continues to be detected. The use of malathion should be minimal considering most fields should already be free of the boll weevil. At the end of the third or fourth season, the program's eradication efforts should be successful, with cotton growers beginning to experience better yields, much lower production costs due to reduced pesticide use, and an increase in the value of their land.

Q. Why does the program use airplanes to treat the cotton fields?
A. In order to successfully eradicate the boll weevil, hundreds of thousands of acres of infested cotton fields must be treated with malathion within very short periods of time. It's not feasible to conduct such an extensive eradication program without aerial application. Aerial applicators are capable of treating fields much more efficiently and just as effectively as ground units. Without airplanes, the boll weevil eradication program would last longer and be much more expensive. Helicopters are also effective, but there are not enough in the area to fully support the program or replace the use of planes.

Cotton fields, which have traditionally been treated by growers with ground equipment, may be treated by airplanes during boll weevil eradication. Ground equipment will continue to be used near sensitive sites.

Q. What precautions are taken to avoid spraying houses, businesses, and other public buildings next to cotton fields?
A. The Boll Weevil Eradication Program uses satellite guidance (GPS) and mapping technology to ensure that only cotton fields are treated with malathion. Aerial applicators are trained to fly with precision and spray fields targeted for boll weevil eradication. Satellite tracking enables program personnel to print the flight paths of every plane used by the eradication program. This information is helpful if there is ever a question about whether a plane sprayed beyond the boundaries of a specific cotton field.

Great care is taken to ensure that schools, hospitals, churches, and other sensitive locations are identified before any spraying takes place. When cotton fields are adjacent to these buildings, ground equipment is frequently used for treatment in order to reduce the potential for any drift. Spraying does not occur near schools while classes are in session, or while after-school activities are taking place.

In addition, the program's aerial and ground sprayers always adhere to strict rules regarding weather conditions in order to limit the potential offsite drift from the cotton fields. If the wind blows above 10 mph, or toward a sensitive site, treatments are stopped until favorable conditions return.

Q. Is it okay to be outside when malathion is being sprayed on nearby cotton fields?
A. Malathion is scientifically proven save and effective when used properly. When applied in accordance with the rate of application and safety precautions specified on the label, malathion can be used without posing a significant risk to human health. However, the program recommends that people who live next to cotton fields remain indoors during the brief spray interval in order to minimize any potential exposure. If you have questions about when the fields near your house will be sprayed, please call the Tennessee program office at (731) 772-8763 and someone will give you a general timeframe when the cotton will be treated. This will allow you to make plans to be inside, run an errand, or move to an alternate location if you desire during the short treatment period. Changing weather conditions, however, may affect spray times, so it may be necessary for the program to adjust its spray schedules.

Q. What will happen if I'm exposed to malathion while the program is spraying nearby fields?
A. Because the program is treating only infested cotton fields with malathion, it is unlikely that anyone will come into direct contact with the pesticide.

Historically, people exposed to malathion experience no reaction at all. As mentioned before, it's frequently used in the home and garden as an insecti-

cide. Some people, however, may experience minor reactions. Symptoms will generally clear within an hour or two of exposure, and will cause no residual effects.

To prevent such exposure, people should avoid being out of doors in the immediate treatment area for about 30 to 60 minutes after the spraying takes place. Residents immediately adjacent to an area where spraying is taking place may want to keep doors and windows closed during the brief application period.

Studies of laboratory animals show some suggestive evidence that malathion *may* be carcinogenic at *extremely high doses* over *extended periods* of time. These levels are thousands of times higher than a person would ever encounter, even if they stood in a cotton field and were sprayed directly with malathion each time the field was treated.

Q. How does malathion affect people with allergies, asthma, or other special health problems?
A. Malathion may affect people with these pre-existing health conditions. If you're concerned, please contact your doctor or a health professional.

Q. Is the spray harmful to pets?
A. The program recommends that pets be kept inside during treatment. Pets that are exposed to malathion should not experience any residual effects. If you think your pet may have come into contact with malathion after walking through dew-covered cotton plants following a treatment, give it a bath to remove any contamination.

Malathion can be toxic to fish. If your small pond is adjacent to a cotton field, the program recommends covering it, especially if the pond is less than three-feet deep. Such ponds should be uncovered shortly after the aerial application to prevent oxygen depletion.

Q. What if malathion gets in my backyard swimming pool?
A. Malathion for boll weevil eradication is applied directly to infested cotton fields, not to swimming pools. But if a limited amount does enter a shallow pool, there would be little health risk for swimmers. If a shallow pool (2 feet or less) was accidentally sprayed with malathion during an aerial boll weevil application, as a precaution, people should avoid swimming in the pool for 24 hours. If a pool is deeper, the risk decreases greatly and swimming can commence sooner.

If you are concerned that malathion may have drifted into your pool, please call your local eradication program office. Environmental monitoring specialists can place dye cards next to your pool prior to the next treatment to determine if any malathion is getting near your pool. If no spots are visible on the cards, malathion has not drifted into the area. If spots do appear, the dye cards can be analyzed to determine the amount of malathion and ensure that it is far below any level of concern.

Q. How long will malathion residue remain in yards?
A. Residues from applications of malathion are short-lived. Malathion should dry on grass, vegetation, and other outdoor surfaces within 2 hours. On especially humid days, malathion may take longer to dissipate. As a precaution, you can use a hose to wash off outdoor household articles, including swing sets and picnic tables, following treatments in adjacent fields. To further reduce any risk of exposure, wear shoes and socks if you live next to a cotton field and plan to be outside following a treatment.

Q. Is it safe to eat food from my garden if I live next to a cotton field that's being treated?
A. Yes. Malathion is commonly used in homes and gardens. As with any produce, of course, it's important to thoroughly wash your fruit and vegetables before serving. If you're concerned about exposure, samples can be taken from your garden and tested for malathion, assuming you are not already using it to protect your own vegetables against insects.

Q. Who can I contact for more information?
A. If you have questions about the program, please call the Tennessee program office at (731) 772-8763.